

REMARKS

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Claim Rejections under 35 U.S.C. § 112

Paragraphs 4 and 5 of the Office Action refer to the rejection of claims 4 and 22 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserts that there is no indication that the donors “comprise” peroxide, only that the donors can be peroxides, such that the donors “consist of peroxides.” In the Specification, the words “radical donors” are twice followed by the word “peroxides” in parentheses, *see* Specification p. 4, l. 19 and p. 9, l. 15. Applicant contends that to a person of ordinary skill in the art, this usage does not limit the radical donors only to peroxides, but rather provides peroxides as an *example* of a suitable radical donor, *i.e.*, the donors may comprise peroxide. However, to move the application toward allowance, Applicant has amended claims 4 and 22 to read that the donors “consist of peroxide.”

Paragraphs 6 and 7 of the Office Action refer to the rejection of claims 20-21 as being indefinite under 35 U.S.C. § 112, second paragraph. As such, Applicant has amended claims 20-21 to more precisely state “carrier film” instead of simply “film.” Support for this amendment is suggested in the description of the preferred embodiments at page 7.

Claim Rejections under 35 U.S.C. § 103(a)

Paragraphs 8 and 9 of the Office Action deal with the rejection of claims 9, 11, 14, 16, 17, and 21. The Examiner asserts that the preceding claims are unpatentable under 35 U.S.C. § 103(a) over EP 0 496 545 A2 (hereinafter ‘545) in view of U.S. Patent No. 4,243,696 to Toth (hereinafter Toth) because the subject matter of the invention would have been obvious to a person of ordinary skill in the art. Applicant respectfully disagrees with this assertion.

Claim 14 has been cancelled. However, in order to move the case toward allowance, Applicant has amended independent claim 9 to read:

A process to manufacture a glass-fiber reinforced resin-plate coated with resin and sand comprising the following steps:

- a) bonding of resin and glass fibers by heating to a plate-like base material,

b) cooling-down of the base material to a temperature in a range between about 50 °C and about 90 °C until the base material partly gelatinizes, but the top surface of the base material, which is to be coated, has not yet completely hardened, using a cooling-fluid to accelerate the cooling-down,

- c) applying of the resin onto the partly gelatinized top surface which is to be coated,
- d) applying of sand on the not-yet hardened top surface which is to be coated,
- e) rolling-in of the sand in the resin layer applied in step c), and
- f) heating of the base material coated in such a manner in an oven, wherein step (f) provides an anti-slip property to the resin-plate.

The object to be solved by '545 in view of Toth has been generally providing an in-line fabrication of composite sheet material without focusing on specific fabrication problems which came up later on, when in-line fabricating methods of composites have been already well-known. '545 teaches a method of continuous production of a glass reinforced plate which can be coated with resin materials and filler, the method including heat-bonding of resin and glass fibers to form a plate-like base material. Thereafter, the heated material is removed from the oven and starts cooling. **'545 does not teach a particular cooling.** The cooling which occurs generally when a heated material is taken from the oven cannot be compared to interposing a controlled cooling step as claim in claim 9, step b, *see* Specification p. 7, l. 24-27. This particular cooling step is performed between two heating steps, intending to provide the interrupting or slowing down of the chemical reaction or cross-linking of the materials before the second heating is provided. Said interrupting or slowing down keeps the material in a reactive state, thus permitting the cross-linking of the base material with further resin, *see* step c), or permitting the embedding of sand in the case material, essentially without applying extra pressure. So, the rolling of the sand, *see* step f), is carried out using an economically working rolling device.

Said particular step b) in claim 9 of cooling to a temperature between about 50 °C and about 90 °C gives a specifically predetermined range which matches to the characteristics of the resins used in the herein described process. Advantageously, the temperature of the down-cooled base material is about 70 °C, *see* amended claim 25 and Specification p.4, l. 22 or p.7, l. 24, which is the optimal temperature for said specifically indicated base material maintaining the desired reactivity within a certain curing state.

The conducting of the controlled cooling at this very state thereby provides an economic and simple performing of the process, since the temperature of the down-

cooled material is not lower than necessary, and the heating process in step f) can therefore be carried out under minimization of the heating energy.

Toth describes a method and an apparatus for making particle-containing plastic coatings. Applicant agrees that Toth teaches the manufacturing of non-slip coatings, in which the manufacturing comprises the general steps of providing a base coat of resin on which a resin/particle(s) mixture can be applied, wherein the particles might be silica or sand. However, Toth does not refer to an inline-method and therefore does not focus on problems of in-line production.

Accordingly, a person skilled in the art could not transcribe the method by Toth onto the in-line method given in '545 due to particular problems occurring during the process, induced by the specific characteristics of the mixture of sand and resin. Validating the above-referenced application in a retrospective view might therefore lead to overlooking solutions that had been found for system inherent questions. Based on the preceding argument, claim 9 is patentable. Because claims 11, 16, 17, and 21 depend upon claim 9 and add limitation thereto, those claims are patentable as well.

Furthermore, claim 16 provides a definite cooling temperature of the base material of about 50 °C to about 90 °C whereby the base material is kept at a predetermined temperature, but the further proceeding or heating can be conducted with a temperature of only about 105 °C. At that point, the structure of the polymer is not completely cured, so the relatively low temperature of about 105 °C permits a reduced energy supply for the process. Such an aspect is not taught by '545 in view of Toth.

In amended claim 17, it must be considered that the inventive feature is not the usage of an upper carrier film *per se*, but the pulling off of said carrier film just before steps c) and d). This implicitly teaches that the emission of vapors may only occur in the cooling down section between point 19 and the oven, *see* Specification p. 7, l. 21-30. Therefore, the area of vapor emitting is clearly defined, which is not taught by '545 in view of Toth, enabling a controlled management of emission and thereby permitting a custom-tailored drawing-off of vapors as claimed in claim 12.

Paragraph 10 of the Office Action refers to the rejection of claim 12 as being unpatentable under 35 U.S.C. § 103(a) over '545 in view of Toth. The amended claim 12 depicts drawing-off of vapors as discussed above, thereby taking into consideration that the areas which permit the emission of such vapors are drastically reduced due to the

above conducting of the steps and the due to the specific arrangement of the apparatus. Claim 12 focuses on the specific drawing-off of vapors in a manner that is not taught by '545 in view of Toth, where documents refer to the drawing-off of vapors only generally, and is therefore patentable.

Paragraph 11 of the Office Action refers to the rejection of claim 15 as being unpatentable under 35 U.S.C. § 103(a) over '545 in view of Toth and further in view of Van Dyck et al., U.S. Patent No. 3,929,545 (hereinafter Van Dyck). First, it is noted that Van Dyck claims the manufacturing of laminates under usage of only one curing zone, curing performed herein under usage of UV-light, *without* usage of carrier films or the like. Accordingly, the specific demands related to the use of carrier films are not relevant, and so Van Dyck does not need to point out a specific cooling under reference of performing cooling and its associated benefits. Thus, Van Dyck does not teach or suggest anything with respect to specific temperatures or ranges. Therefore, a person of ordinary skill in the art would not use Van Dyck as a base in order to optimize a methods of in-line manufacturing of glass-fibre reinforced resin-plates relying on temperature management. However, claim 15 has been cancelled and the feature of claim 15 of supplying a cooling fluid to accelerate the cooling-down process has been added to claim 1.

Paragraph 12 of the Office Action refers to the rejection of claims 1-2, 4-5, 7-8, 13, 20, and 22 as being unpatentable under 35 U.S.C. § 103(a) over '545 in view of Toth and further in view of Parker et al., U.S. Patent No. 3,655,823 (hereinafter Parker). The Examiner applies '545 and Toth in the same manner as discussed above and asserts that Parker further teaches coating a substrate with a resin and curing the coated article by adding radicals such as peroxide. Similar to claim 9 above, Applicant has currently amended claim 1 to now read:

A process for a continuous production of a glass-fiber reinforced resin-plate coated with a mixture of resin and sand comprising the following steps:

- a) bonding of resin and glass fibers by heating to a plate-like base material,
- b) cooling-down of the base material to a temperature in a range between about 50 °C and about 90 °C until the base material is partly gelatinized, but the surface of the base material which is to be coated, is not yet completely hardened, using a cooling-fluid, which is supplied to accelerate the cooling-down,
- c) applying of the mixture of resin and sand directly on the not-yet hardened top surface which is to be coated, in order to provide anti-slip property to the resin-plate, and
- d) heating of the base material, coated in such a manner, in an oven, wherein radical donors are supplied in step d) which causes a cross-linking of the base material with the mixture of resin and sand.

Amended claim 1 is patentable over Toth and '545 for the same reasons as claim 9 discussed above, *supra*, pp. 7-8. Parker does not cure the deficiencies of Toth and '545, and furthermore does not teach adding the radicals *after* curing has already started (col. 6, l. 20-25). Parker is cumulative to the U.S. Patent No. 3,980,610 to Conrad, which was previously cited by the Examiner in the October 31, 2005 Office Action. Hence, the hypothetical combination of '545, Toth, and Parker does not have all the elements of claim 1. Because the currently amended independent claim 1 is patentable as discussed above and claims 2, 4-5, 7-8, 13, 20, and 22 depend upon claim 1 and recite further limitations thereto, these claims are patentable on this ground alone.

Paragraph 13 of the Office Action refers to the rejection of claim 3 as being unpatentable under 35 U.S.C. § 103(a) over '545 in view of Toth, Parker, and further in view of Holmes, U.S. Patent No. 4,243,719 (hereinafter Holmes). The patentability of amended claim 3 is discussed in the section addressing Office Action paragraphs 10-11. For support of the amendments to claim 3, *see* Specification p. 4, l. 15 and p.9, l. 5-8.

Applicant further asserts that Parker is not relevant for a person skilled in the art. It is noted that Parker describes a "novel mixture of acrylic monomers and polyester resins," which describes a typical chemical invention using typical chemical language. It cannot be supposed that a person skilled in the art of engineering methods for in-line methods and apparatuses for manufacturing glass-fibre composites would base his considerations on a chemical patent.

Paragraph 14 of the Office Action refers to the rejection of claim 6 as being unpatentable under 35 U.S.C. § 103(a) over '545 in view of Toth, Parker, and Van Dyck. Claim 6 has been cancelled, but its limitation on supplying a cooling fluid to accelerate the cooling-down process, like claim 15, has been transferred to claim 1. For a discussion of the obviousness of this limitation, *see* the discussion of Office Action paragraph 11 above.

Paragraph 15 refers to the rejection of claims 9-11, 14, 16, and 21 as being unpatentable under 35 U.S.C. § 103(a) over Benedict et al., U.S. Patent No. 5,681,612 (hereinafter Benedict) in view of Toth. Applicant respectfully disagrees with the Examiner's assertion that Benedict is relevant for a person skilled in the art. Benedict discloses methods for preparing – piece by piece, not line by line – endless, seamless flexible belts as devices for use on pulleys, wheels, drums for sanding, grinding, polishing various surfaces, *etc.* It

does not refer to devices comprising anti-slip properties. Accordingly, Benedict is in a field most distance from the field of the present invention. Anti-slip does not mean abrasive: Wheels and shoe soles, *e.g.*, may be equipped with anti-slip properties, but they often don't exhibit abrasive properties. Furthermore, endless, seamless flexible belts as taught by Benedict are *per se* not plates, which by contrary require a particular stiffness. Applicants further notes that a piece-by-piece production method cannot be transcribed without remarkable and inventive changes and modifications into an economically and ecologically designed in-line method. Accordingly, the above discussed arguments in reference to claim 9 are referred to again, depicting the patentability of independent claim 9 and therefore to dependent claims 10, 11, 12, 16, and 21. Applicant notes again that claim 14 has been canceled and its limitations are incorporated into amended claim 9.

Paragraphs 16, 17, 18, and 19 of the Office Action depict further rejections of claims 12, 15, 13, 22, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Benedict in view of combinations of Toth, Holmes, Van Dyck, Parker, and '545. Applicant refers to the preceding paragraph's discussion as to the irrelevance of Benedict to a person skilled in the art, and its impropriety for use in a § 103(a) obviousness rejection.

New Claims

The herewith presented new claims 23, 24, 25, and 26 refer to further aspects providing patentability of the herein discussed invention. Claims 23 and 24 depend upon claim 1 and add further limitations thereto, while claims 25 and 26 do the same with respect to claim 9. All new claims have sufficient support in the disclosure as originally filed.

Claim 23 indicated the most preferred temperature, which is 70 °C, for the specific cooling-down temperature of the cooled base material when the particular cooling step in step b) of claim 1 is carried out. Said preferred temperature matches best to the characteristics of the resins used in the herein described process. The herein described temperature has been disclosed in the Specification at p.4, l. 22 and p. 7, l. 24 as an optimal temperature for maintaining the desired reactivity of the base material.

Claim 24 depicts the advantageous application of the mixture of resin and sand as performed by doctor blading using a doctor blade pan in step c) of claim 1. This feature has been disclosed at p. 8, l. 24-25 in the Specification as originally filed. The usage of such a device provides a smooth and even coating, making the commonly known but material-wasting kiss coating unnecessary, and therefore leading to a more economic performance of

manufacturing.

Claim 25 claims the same subject matter as claim 23, but depends upon and limits claim 9. Claim 26 similarly claims the same subject matter as claim 24, but depends upon and limits claim 9, as well.

The herewith presented new independent claim 27 is similar to claim 9, but without the presently added limitations, and adds the additional limitation that steps a) through f) be performed separately and in a sequential manner. In paragraph 9 of the Office Action, the Examiner asserts that the '545 patent teaches a method of continuous production of a glass fiber reinforced resin plate that are substantially the same as claim 9, and that the steps of claim 9 as claimed do not have to be performed separately or in the specific order. For example, the Examiner asserts that claim 9's step c) ("applying of the resin onto the partly gelatinized top surface which is to be coated") and step d) ("applying of sand on the not-yet hardened top surface which is to be coated") are rendered obvious by the '545 patent's provision that a mixture of resin material and filler can be applied to the not yet hardened top surface. The limitation of new claim 27 that the steps be performed separately and in a sequential manner eliminates the basis for this rejection, and claim 27 is allowable.

Conclusion

In view of the foregoing remarks, Applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

The addition of new claims 23-27 and cancellation of claims 5-6 and 14-15 results in a total of 21 claims pending in the application, including three independent claims. As such, the fee for 1 extra claim is submitted herewith. No other fees are believed due for this amendment. If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-1980. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

The Examiner is respectfully requested to contact the undersigned attorney by telephone should there be any remaining questions as to the patentability of the pending claims or if such a call would help to expedite the allowance of the pending claims.

Respectfully submitted,

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/H.T. Than/

H.T. Than

(Reg. No. 38,632)

The H.T. Than Law Group
1010 Wisconsin Avenue, NW, Suite 560
Washington, DC 20007
(202) 363-2620